



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,791	02/03/2004	Masao Tanaka	900-491	9239
23117	7590	08/21/2007		
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER HALL, ASHA J	
			ART UNIT 1753	PAPER NUMBER
			MAIL DATE 08/21/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/769,791	Applicant(s) TANAKA, MASAO	
	Examiner Asha Hall	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> | 6) <input type="checkbox"/> Other: _____  |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :February 3, 2004 and June 1, 2007.

## **DETAILED ACTION**

### ***Specification***

1. The abstract is objected to because extensive design details of the apparatus are given. The applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 8-11, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishikawa et al. (5,524,401).

In regard to claim 1, Ishikawa et al. discloses an attaching structural unit (col. 1; lines: 6-9) used for installing a quadrangular solar-battery module onto a slanted roof (col.2; lines: 26-30): comprising a module frame(11) attached to the solar-battery module (3); the module frame(11) comprising a pair of first and second elongated frame elements (35) opposed to each other and another pair of third and fourth elongated frame elements (36) opposed to each other as shown in Figure 9, wherein each of the third and fourth frame elements respectively includes a water-leakage preventive edges (48, 49) as shown in Figure 5 protruding outward and extending longitudinally from each of the frame elements(35) (col. 1; lines: 37-41 & col. 6; lines: 61- 65).

With respect to claim 2, Ishikawa et al. discloses the attaching structural unit of claim 1 above (Figure 1), and further discloses in Figure 5 the first frame element (11) is a front-side frame element placed in the direction of an eaves (48) side of the roof;

Art Unit: 1753

the second frame element/supporting member (40) is a rear-side frame element placed in the direction of a ridge (49) side of the roof. Ishikawa et al. also discloses in Figure 9, the third frame element (35) is a left-side frame element placed in the direction of a left side with respect to the slope of the roof (col.2; lines: 26-30); and a fourth frame element (36) is a right-side frame element placed in the direction of a right side with respect to the slope of the roof (col.2; lines: 26-30), and in the state that the module frame is attached the solar-battery module (3) to form a module unit and a plurality of the module units (1) as shown in Figure 1& 7 are placed on the roof adjacent to one another or adjacent to roof-forming members(col.1; lines: 6-9) ; the rear-side frame element in one module unit is placed under the front-side frame element of another module unit or under a roof-forming member adjacent to said one module unit in an overlapped manner (Figure 5 and 7), the water-leakage preventive edge in the left-side frame element in one module unit is under or on the water-leakage preventive edge (25) in the right-side end in a roof-forming member adjacent to said one module unit in an overlapped manner (col.6; lines: 61-65, col.8; lines: 13-18 & Figure 5 & 7), and the water-leakage preventive edge/extending piece (39) as shown in Figure 7 in the right-side frame element in one module unit is on or under the water-leakage preventive edge/extending piece (39) in the left-side frame element (35) of another module unit (col.8; lines: 32-37) or the left-side end (35) (Figure 9) in a roof-forming member adjacent to said one module unit(3) in an overlapped manner (col.8; lines: 13-18).

With respect to claim 3, Ishikawa et al. discloses the attaching structural unit of claim 2 above, wherein the front-side frame element has a front hook/slant portion (39a)

Art Unit: 1753

on its lower surface, and the rear-side frame element has a rear hook/slant portion (39a) on its upper surface which can be engaged with the front hook/slant portion (39a) in another module unit (as shown in Figure 8) (col. 7; lines: 56-62).

In regard to claim 4, Ishikawa et al. discloses the attaching structural unit of claim 3 above, wherein a securing member/rafters (7) for securing the module frame onto a beam (23) on the roof is further provided and the rear-side frame is further provided with a protruding hook that protrudes forward on its lower surface the securing member/rafters (7) being provided with a plurality of securing metal tools/nails (col. 6; lines: 18-24 & Figure 2),

- a front securing tool/screw fasteners that can be engaged with the front hook/C-shape portion in the front-side frame element (17),
- a rear securing tool/screw fasteners that can be engaged with the protruding hook/C-shape portion in the rear-side frame element (17) (col.5; lines: 24-31& Figure 2),
- the front securing tool being provided with hole sections/nailing through which the securing metal tools are inserted (col.5; lines: 24-37 & Figure 3), so that the front securing tool/nailing is secured to the beam (23) of the roof through the roof-forming member (5), and the rear securing tool being provided with hole sections through which the securing metal tools are inserted (Ishikawa discloses the use of nails and thus inherently leads to the existence of "hole sections" (col. 6; lines: 19-25), and being placed on the beam (23) in an engaged state with the

protruding hook/extended piece (39) of the rear-side frame element (col.6; lines: 6-9).

With regard to claim 5, Ishikawa et al. discloses attaching structural unit of claim 1 as shown in Figure 1, wherein the first frame element (17), second frame element (17), third frame element (17) and fourth frame element (17) are divided respectively, and are connected and assembled with small screws/screw fasteners (col. 5; lines: 15-29).

With respect to claim 6, Ishikawa et al. discloses attaching structural unit of claim 3, wherein the front hook/c-shape portion (col.2; lines: 56-60) is detachably attached to the front-side frame element (17) from its front side by using screw fasteners (col. 5; lines: 15-29).

With respect to claim 8, Ishikawa et al. discloses attaching structural unit of claim 1, wherein the module frame is further provided with a reinforcing member/support member (6b) as shown in Figure 2 which is placed on the back face of the solar-battery module so as to connect the first frame element and the second frame element (col. 2; lines: 34-39 & col. 3; lines: 20-26).

In regard to claim 9, Ishikawa et al. discloses attaching structural unit of claim 4, wherein the rear securing tool/rafter (7) is formed to have a length shorter than the rear-side frame element (17).

With respect to claim 10, Ishikawa et al. discloses attaching structural unit of claim 1, wherein the module frame is further provided with a foamed resin member/packing member (16) that is incorporated in a gap (Figure 4) between the



Art Unit: 1753

module frame (17) and the solar-battery module(3).

In regard to claim 11, Ishikawa et al. discloses a module unit, comprising a quadrangular solar-battery module (3) and a module frame (17) in the attaching structural unit of claim 1 (col.2; lines: 60-61), to be attached to the solar-battery module (3)(Figure 1).

In regard to claim 13, Ishikawa et al. discloses a solar-battery structural unit (1) as shown in Figure 1, comprising a quadrangular solar-battery module (3) and a module frame (17) to be attached to the solar-battery module (3) to form a module unit (1); and a securing member/rafters (7) used for securing/nails (col. 6; lines: 18-24 & Figure 2), the module unit on a beam (23) on a roof, wherein the module frame (17) is provided with: a front-side elongated frame element to be placed in the direction of an eaves of a slanted roof (col. 2; lines: 27-39); a rear-side elongated frame element to be placed in the direction of a ridge of the roof (col.4; lines: 4-7); a left-side elongated frame element to be placed in the direction of a left side with respect to the slope of the roof which has a water-leakage preventive edge protruding outward and extending longitudinally from the frame element (col. 8; lines: 13-17) ; and a right-side elongated frame element (35) to be placed in the direction of a right side with respect to the slope of the roof which has a water-leakage preventive edge/extended piece (39) protruding outward and extending longitudinally from the frame element (col.7; lies: 39-43),

- the front-side frame element being provided with a front hook/extending piece (39) on its lower surface/lower plate (37) (col.7; lines: 55-61), and

Art Unit: 1753

- the rear-side frame element/upper frame (33) being provided with a rear hook placed on its upper surface(33) and located on the front hook/extending piece (39) of the front-side frame element (36) of another module frame (Figure 7) and engaged therewith in the front-to-rear direction (Figure 7),
- a protruding hook/extending piece (39) protruding forward on the lower surface/lower plate (37) , and the left-side frame element (35) and right-side frame (36) element being respectively provided with a water-leakage preventive edge protruding (39) outward and extending longitudinally from frame element (col.8; lines: 37-43),
- the securing member including a plurality of securing metal tools/screw fasteners (col. 5; lines: 24-31), a front securing tool/sealing members (12,14)for engaging with the front hook (39) (Figure 8) of the module frame (35) in the front-to-rear direction (Ishikawa et al. discloses that the modules are held between the sealing members (12,14) (col. 5; lines: 24-31) as shown in Figure 4 & 8), and a rear securing tool/sealing member (50) for engaging with the protruding hook (39) of the module frame (35) in the front-to-rear direction (Figure 8),
- the front securing tool including hole sections (Ishikawa discloses the use of screw fasteners and nails precludes to the existence of "hole sections" (col. 6; lines: 19-25), through which the securing metal tools/nails (col. 6; lines: 18-24 & Figure 2) are inserted, so that the front securing tool is secured to the beam (23) of the roof through the roof-forming member (5) as shown in Figure 2

Art Unit: 1753

- the rear securing tool (Ishikawa discloses repeating elements such that they are connected in series as shown in Figure 7) having hole sections (Ishikawa discloses the use of screw fasteners and nails inherently leads to the existence of "hole sections" (col. 6; lines: 19-25) through which the securing metal tools are inserted which is placed on the beam (23) in an engaged state with the protruding hook of the rear-side frame element (col.6; lines: 19-24), in the state that the module frame is attached the solar-battery module to form a module unit and a plurality the module units are placed on a roof adjacent to one another or adjacent to roof-forming members (col.4; lines: 49-54);
- the rear-side frame element (36) in one module unit (3) being placed under the front-side frame(36) element of another module unit (36) or a roof-forming member adjacent to said one module unit in an overlapped manner (col.8; lines: 13-18 & Figure 7 & 8),
- the water-leakage preventive edge/extending piece (39) in the left-side frame (35) element in one module unit (3) being under or on the water-leakage preventive edge in the right-side frame element of another module unit or a right-side end in the roof-forming member in an overlapped manner (col.8; lines: 13-18 & Figure 7),
- the water-leakage preventive edge/extending piece (39) in the right-side frame element (36) in one module unit (3) being on or under the water-leakage preventive edge in the left-side frame element of another module unit or a left-

side end in the roof-forming member in an overlapped manner (col.8; lines: 13-18 & Figure 7).

With respect to claim 14, Ishikawa et al. discloses an attaching method for the solar-battery structural unit of claim 13 above, comprising the steps of: securing the front securing tool to the beam of the roof from above the roof-forming member with the securing metal tools/nails (col.4; lines: 49-59); engaging the rear securing tool/nails with the protruding hook/extended piece (39) of the rear-side frame element (36), engaging the front hook/ extended piece (39) of the front-side frame element (36) with the front securing tool/nails, and placing the rear securing tool/nails on the beam(23) of the roof, and securing thereon with the securing metal tools/nails (col.6; lines: 19-24).

In regard to claim 15, Ishikawa et al. discloses the attaching method of claim 14, wherein, in case where the module units (3) are placed on a roof (1) with a plurality of rows (Figure 7) in the front-to-rear direction, the protruding hook/extended piece (39) of the rear-side frame element (35) in the module unit to be located in the direction of the ridge of the roof is engaged with the rear securing tool/nails (col.4; lines: 49-59), the front hook of the front-side frame element in the same module unit is also engaged with the rear hook of the rear-side frame element in a module unit to be adjacent to the above module unit, and the above rear securing tool is placed on the beam (23) of the roof (1) and secured with the securing metal tools/nails (col.4; lines: 49-59).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1753

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (5,524,401) in view of Kinoshita et al. (US 2002/0053360)

In regard to claim 7, Ishikawa et al. discloses attaching structural unit of claim 2, but fails to disclose wherein the module frame is further provided with a decorative cover that is detachably attached to the front-side frame element.

Kinoshita et al. discloses a solar cell module for the roof (paragraph 5) and further discloses wherein the module frame/edges of the solar cell installed in such a manner are provided with a decorative cover for preventing infiltration of rainwater and for improving the external appearance (paragraph 5). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a decorative cover as taught by Kinoshita et al. to the photovoltaic structural unit of Ishikawa et al. in order to prevent infiltration of rainwater and for improving external appearance.

6. Claims 12, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al. (5,524,401) in view of Mizukami et al. (6,242,685).

With respect to claim 12, Ishikawa et al. discloses a module unit of claim 11, but fails to disclose a back film with metal foil bonded to the rear surface of the solar-battery module.

Mizukami et al. discloses photovoltaic modules (11) on a roof (Figure 5A) and further discloses a back steel or aluminum plate (13) as shown in Figure 3 (col. 3; lines: 17-23) serving as the anode of the photovoltaic module (11) (col. 3; lines: 24-29). It

Art Unit: 1753

would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the metal foil/stainless steel plate as taught by Mizukami et al. to the solar module unit of Ishikawa et al. in order to have the aluminum plate serve as the anode of the photovoltaic module.

With respect to claims 16 and 17, Ishikawa et al. discloses removing method for a module unit attached on a roof by using the attaching method of claim 15 above, but fails to disclose the steps of: removing the front hook of the front-side frame element in a module unit to be exchanged, pushing the module unit up toward so that at least the protruding hook of the rear-side frame element is separated from the rear securing tool, and raising the front end of a module unit or roof-forming member adjacent to the above module unit, thereby detaching the module unit to be exchanged from the roof and followed by inserting the new module unit into the position of removed module unit, engaging the protruding hook of the new module unit on the rear securing tool, re-attaching the front hook which is beforehand detached to the new module unit, and engaging the front hook with the front securing tool or the rear hook of the adjacent module unit.

Mizukami et al. discloses the steps or method of installing a photovoltaic module on a roof (col.1; lines: 5-7), and further discloses removing/detaching the module unit (11) by pushing the module unit up toward protruding hook of the rear-side frame element is separated from the rear securing tool/removing the screw (21), slidably moving the module toward the eaves side (col.5; lines: 12-20). Mizukami et al. further teaches in the case where a problem or damage occurs in the photovoltaic module,

Art Unit: 1753

then the damaged photovoltaic module can be replaced by a new photovoltaic module (col. 5; lines: 12-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate steps for removing/ detaching the photovoltaic modules as taught by Mizukami et al. to the photovoltaic modules of Ishikawa et al. in order to replace the damaged photovoltaic module with a new photovoltaic module.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Asha Hall whose telephone number is 571-272-9812. The examiner can normally be reached on Monday-Thursday 8:30-7:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 1753

AJH



ALEXA D. NECKEL  
SUPERVISORY PATENT EXAMINER